

PATENT ABSTRACTS OF JAPAN

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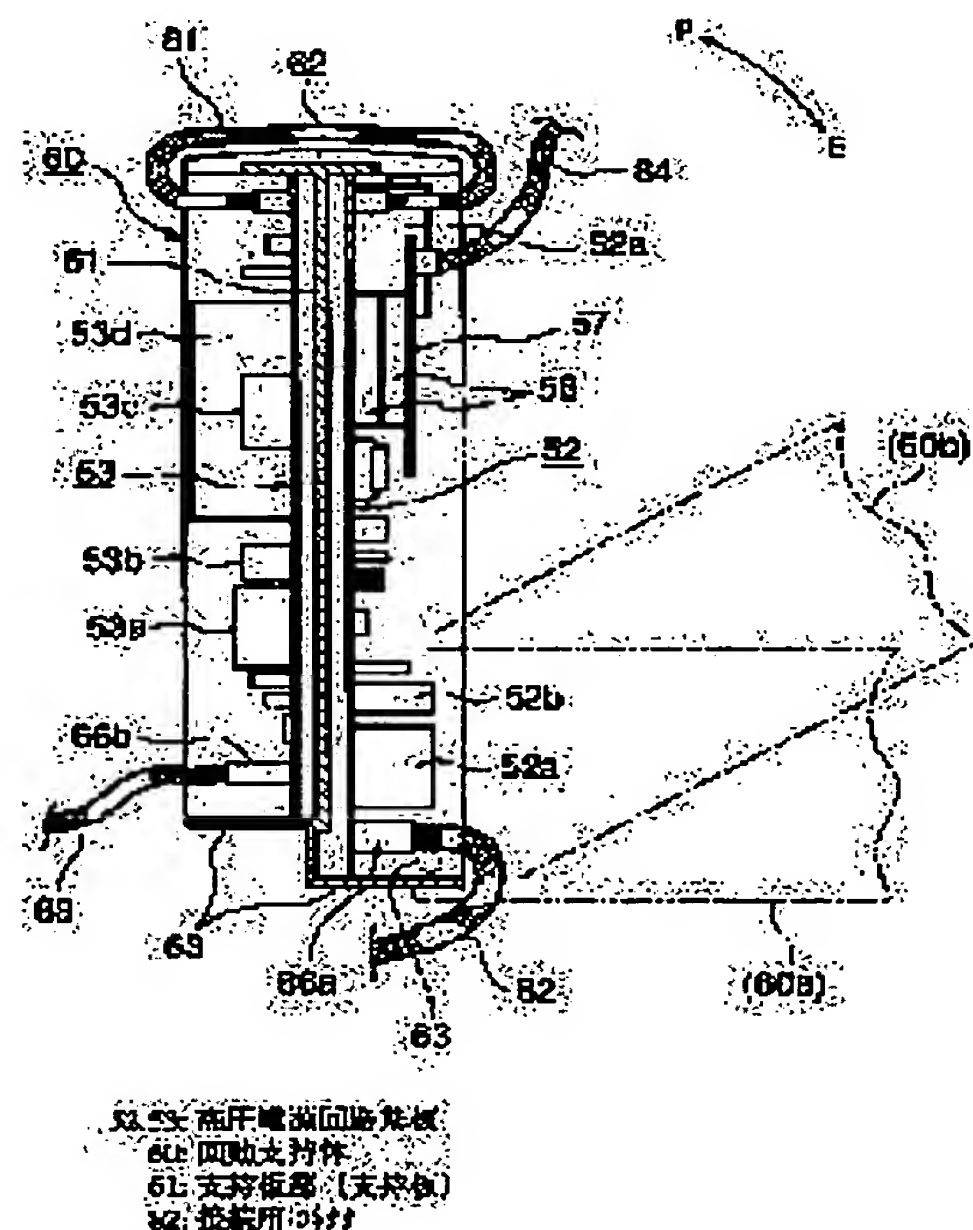
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(54) IMAGE FORMING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an image forming device capable of miniaturizing a power source part, especially, and improving the workability at the time of the assembly or maintenance of the image forming device including the power source part.

SOLUTION: High-voltage power source circuit boards 52 and 53 are attached and arranged to the front surface and the back surface of a supporting plate 60 (61) having electric insulating property in a state where the soldered surfaces of the boards 52 and 53 face each other through the plate 61. Then, the plate 61 is arranged at a part on the backmost side of the entire device or turnably attached to specified supporting frames 65 and 66.



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CLAIMS

[Claim(s)]

[Claim 1] Image formation equipment characterized by attaching and arranging the high voltage power supply circuit boards in the condition that the solder side of each of that substrate faces mutually the front rear face of the support plate which has electric insulation through the support plate.

[Claim 2] Image formation equipment according to claim 1 which has arranged said support plate with which said high voltage power supply circuit board was attached to the part of the whole equipment which becomes a tooth-back side most.

[Claim 3] Image formation equipment according to claim 1 or 2 which attached said support plate with which said high voltage power supply circuit board was attached rotatable to the predetermined support frame.

[Claim 4] Image formation equipment according to claim 3 with which the handle member for equipment migration is attached in the part located in the outside of the bracket while said support frame is the bracket attached in the body frame of equipment.

[Claim 5] Image formation equipment according to claim 4 which attached the handle member for equipment migration in the part located in the outside of the box-like frame while having attached and arranged the box-like frame for AC power supply unit anchoring to the part to which said support plate of said body frame adjoins.

[Claim 6] Image formation equipment according to claim 3 which attached the power-source related circuit board in the part which becomes the equipment transverse-plane side of said support plate of said body frame through the frame for anchoring in the condition of meeting the support plate.

[Claim 7] Image formation equipment according to claim 6 which forms opening for viewing a part of the component [at least] for a maintenance on said frame for anchoring of the power-source related circuit board when the components for a maintenance are arranged at the equipment transverse-plane side of said power-source related circuit board.

[Claim 8] The attachment-and-detachment-type circuit board base material with which the circuit board is attached and supported in image formation equipment according to claim 1 to 7, The electric connector for connection prepared where the field in which that circuit board is attached while making joint connection with said circuit board of this circuit board base material is projected also to the field of the opposite side, It has other fixing components with which the connector for [connected] which makes joint connection with this connector for connection was prepared. When said connector for connection and the connector for [connected] are prepared in the condition that the joint direction ****s with the attachment-and-detachment actuation direction of said circuit board base material, With either said circuit board base material or other components, to and the part used as the circumference of the connector for connection, or a connected connector The letter maintenance material of a clamp which deforms elastically by migration actuation at the time of attachment-and-detachment actuation of the circuit board base material, and carries out compression maintenance of the object is prepared. Image formation equipment characterized by on the other hand establishing the positioning crevice inserted in the direction in which the joint direction of said connectors and the compression section of the maintenance material cross at right angles possible [displacement] in the part by the side of the letter maintenance material of a clamp, other components which counter, or a circuit board base material.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the image formation equipment represented by a printer, a copying machine, facsimile, the compound machine, etc., and relates to the image formation equipment which improved the power supply section advantageous to an assembly activity or a maintenance to the miniaturization pan of the image formation equipment especially.

[0002]

[Description of the Prior Art] Generally the electrophotography method was used and image formation equipments, such as a printer and a copying machine, are [section / in which the need of responding to the request of a miniaturization increasing every year forms increase and its image / imaging system] obliged to the miniaturization (space-saving-izing) also about the power supply section from the first.

[0003] It has already proposed about the installation structure of the electronic-circuitry substrate in the image formation equipment with which these people also attach two or more electronic-circuitry substrates in the support plate which rotates an end on the chassis of image formation equipment (JP,10-161381,A). However, by this proposal, about the miniaturization of the power supply section of image formation equipment, its attention was not paid directly, but it had still left the room of amelioration.

[0004]

[Problem(s) to be Solved by the Invention] It is in offering the image formation equipment whose improvement in the workability at the time of the assembly of image formation equipment and a maintenance this invention was made in view of such the actual condition, and a miniaturization of a power supply section is possible for especially the place made into the main purpose, begins the power supply section, and is also attained.

[0005]

[Means for Solving the Problem] The image formation equipment of this invention is characterized by attaching and arranging the high voltage power supply circuit boards in the condition that the solder side of each of that substrate faces mutually the front rear face of the support plate which has electric insulation through the support plate. Here, although the high voltage power supply circuit board is the circuit board for carrying out the pressure up of the high voltage power supply of 500 - 10000V (10kV) extent, and usually outputting it, it is not limited to especially this. Moreover, the above-mentioned support plate has electric insulation, and the comparison comparative tracking index according [for example,] to A law of IEC112 is formed using the plastic material which fulfills the specification conditions which become 175 or more, and also it may make it the structure in which the enveloping layer of electric insulation was formed on the front face of the conductive base material formed using a metallic material etc. In addition, it is not limited especially about a class, an image formation method, etc. of image formation equipment.

[0006] It is in the condition which approached by this in the high voltage power supply circuit boards for which the installation tooth space is needed comparatively, without opening useless spacing, and moreover, it can arrange by space-saving, securing the necessary insulation distance between the substrate easily by mediation of the support plate of electric insulation. Moreover, electric safety is also fully secured from having attached, where the solder side of each substrate is opposed through the support plate of electric insulation. Consequently, power supply section ***** is advantageous to the miniaturization of image formation equipment.

[0007] Moreover, this image formation equipment is preferably arranged to the part of the whole equipment which becomes a tooth-back side most, although it is also possible to arrange said support plate with which said

high voltage power supply circuit board was attached to the part of the arbitration of the whole equipment. Here, the part which becomes a tooth-back side most is a part inside the sheathing member (covering) of equipment (equipment transverse-plane side) at least. In addition to the ability to access now the high voltage power supply circuit board easily from an equipment tooth-back side by this, compared with the case where it is attached in the circuit board by the body frame of equipment, it becomes easy to do the removal activity of the high voltage power supply circuit board.

[0008] Although not mattered as a configuration attached in a predetermined support frame with fixed means, such as a screw stop, the support plate with which the above-mentioned high-voltage-power-supply circuit board was attached is preferably constituted so that it may attach rotatable to a predetermined support frame. Here, it is not restrained especially about the rotation direction of the above-mentioned support plate. Moreover, the above-mentioned support plate is good to constitute so that it may attach in a predetermined support frame free [attachment and detachment] in addition to attaching rotatable. In addition to the ability to access easily the both sides of the high voltage power supply circuit board which were made to rotate a support plate and were attached in that front rear face by this, it can access now easily also to the components arranged at the interior side of equipment of this support plate.

[0009] Moreover, while the above-mentioned support frame is a bracket attached in the body frame of equipment, the handle member for equipment migration is attached in the part located in the outside of the bracket. In this case, it is not necessary to form a part for the structured division and the handle member for attaching in a body frame in support of said base material rotatable directly. Moreover, it becomes easy to arrange in the part which can use the handle member as the reinforcement member of a bracket, and is easy to deal with it.

[0010] Furthermore, in this case, while attaching and arranging the box-like frame for AC power supply unit anchoring to the part to which said support plate of that body frame adjoins, it is good to attach the handle member for equipment migration in the part located in the outside of that box-like frame. It becomes easy to arrange in the part which can use a box-like frame as the reinforcement member of a body frame, and is easy to deal with it by this. Furthermore, it will be arranged in the location where the handle member attached in this box-like frame and the handle member attached in said bracket adjoined each other, and is easy to deal with it at the time of a maintenance and an equipment migration activity.

[0011] Moreover, it is good for the part which becomes the equipment transverse-plane side of said support plate of the body frame of this image formation equipment to attach the power-source related circuit board through the frame for anchoring in the condition of meeting that support plate. The above-mentioned power-source related circuit board will exist in the interior side of equipment of this support plate, and it becomes easy to access by removing or rotating by this the support plate with which the high voltage power supply circuit board was attached in the time of a maintenance of the circuit board etc.

[0012] Furthermore, in this case, when the components for a maintenance are arranged at the equipment transverse-plane side of said power-source related circuit board, it is good for said frame for anchoring of that power-source related circuit board to form opening for viewing a part of that component [at least] for a maintenance. After removing or rotating by this the support plate with which the high voltage power supply circuit board was attached, even if said power-source related circuit board exists in the interior side of equipment, some [at least] appearance of the components for a maintenance in the interior side of equipment can be viewed and checked from opening established by the power-source related circuit board, and the convenience at the time of a maintenance increases.

[0013] In addition, it sets to the above image formation equipments. The electric connector for connection prepared where the attachment-and-detachment-type circuit board base material with which the circuit board is attached and supported, and the field in which that circuit board is attached while making joint connection with said circuit board of this circuit board base material are projected also to the field of the opposite side, It has other fixing components with which the connector for [connected] which makes joint connection with this connector for connection was prepared. When said connector for connection and the connector for [connected] have established the joint direction in the condition of having made it ****ing with the attachment-and-detachment actuation direction of said circuit board base material, With either said circuit board base material or other components, to and the part used as the circumference of the connector for connection, or a connected connector The latter maintenance material of a clamp which deforms elastically by migration actuation at the

time of attachment-and-detachment actuation of the circuit board base material, and carries out compression maintenance of the object is prepared. It is good for the compression section of the maintenance material to, establish the positioning crevice inserted in the joint direction of said connectors, and the direction which intersects perpendicularly possible [displacement] on the other hand in the part by the side of the letter maintenance material of a clamp, other components which counter, or a circuit board base material.

[0014] By this, even if the location of the connector for connection by the side of the base material and the connector for [connected] by the side of other fixing components enters in the dead angle of the base material, and checks by looking at the time of wearing of a circuit board base material and it is a ***** case After holding in the condition of having positioned the circuit board base material to other fixing component side simply by the letter maintenance material of a clamp, the above-mentioned connectors can be easily combined by making the variation rate of the circuit board base material carry out in the direction shown in a positioning crevice, and justifying it. Consequently, it becomes possible to perform comparatively smoothly wearing at the time of the assembly of that circuit board base material, and a maintenance.

[0015]

[Embodiment of the Invention] The schematic diagram [gestalt 1 of operation] drawing 1 thru/or drawing 3 showing the color-picture formation equipment concerning the gestalt 1 of operation of this invention, and showing the main internal configurations in the appearance list which looked at drawing 1 from the transverse plane and top face of the image formation equipment, the schematic diagram showing the internal structure which looked at drawing 2 from the transverse-plane side of the image formation equipment, and drawing 3 are the perspective views showing the internal structure seen from the tooth-back side of the image formation equipment.

[0016] This color picture formation equipment has composition which combined the image formation section 1 by the side of the upper part, and the feed section 2 by the side of that lower part, if the appearance gestalt of that whole consists of a cube mostly and it divides roughly, as shown in drawing 1 . Moreover, this image formation equipment is constituted from a viewpoint which attains the miniaturization of equipment so that that appearance may be settled in general in small size called width of face of about 630mm, height of about 490mm, and the depth of about 680mm. And finally as for the above-mentioned image formation section 1 and the feed section 2, each of that appearance gestalt is all mostly governed by the configuration of each sheathing coverings 3a and 3b. Among these, while delivery unit 3c by which discharge hold of the recording paper after image formation (print) termination is carried out is formed in the top-face section side of the sheathing covering 3a, dismountable rear-cover 3d is formed in the tooth-back section side at the image formation section 1. Moreover, the power supply section 5 mainly located in the tooth-back side of the imaging system section 4 which forms the image (toner image) according to image information, and this imaging system section 4 is arranged in the interior of the image formation section 1. On the other hand, the feed system section 6 which holds the recording paper P and is sent out to the imaging system section 4 side is arranged in the interior of the feed section 2.

[0017] Four imaging units 10Y, 10M, 10C, and 10K in which the imaging system section 4 of the above-mentioned image formation section 1 forms yellow (Y), a Magenta (M), cyanogen (C), and the toner image of four colors of black (K) in dedication as shown in drawing 2 , That principal part consists of middle imprint units which used the middle imprint belt 20 with which the toner image formed in each of this imaging unit 10 is imprinted.

[0018] The above-mentioned imaging unit 10 is arranged in the location which becomes the lower part side of said middle imprint belt 20 where predetermined spacing is opened and put in order horizontally. The photoconductor drum 11 by which the rotation drive of any of the imaging unit 10 is fundamentally carried out in the direction of an arrow head at the rate of predetermined, The aligner 13 as the electrification roll 12 uniformly charged in the front face of this photoconductor drum 11, and latent-image formation equipment which exposes the light according to image information on the front face of the photoconductor drum 11 after electrification, and forms an electrostatic latent image in it (ROS), It has similarly the developer 14 which develops the electrostatic latent image with the developer of a predetermined color, the primary transfer roller 15 which makes the middle imprint belt 20 imprint the toner image formed of the development electrostatic, and cleaning equipment 16 for drums which cleans the front face of a photoconductor drum 11.

[0019] Among these, the above-mentioned aligner 13 is held in the hold sealing box 17 arranged in the four

lower part side of the imaging unit 10. After irradiating the rotating polygon 18 and carrying out the deviation scan of laser beam LB-Y, LB-M, LB-C, and LB-K which are emitted according to the picture signal decomposed for every color from four semiconductor laser through predetermined optical system (lens etc.), Scan exposure is carried out from a slanting lower part on each photoconductor drum 11 which counters through two or more reflective mirrors which are not illustrated. Sign 17a in drawing 2 is the light exiting surface section for turning and acting to the photoconductor drum 11 of each imaging unit 10 as transparency Idemitsu of each above-mentioned laser beam LB from the inside of the hold sealing box 17. Moreover, 19Y, 19M, 19C, and 19K are toner cartridges (and developer supply equipment which is not illustrated) which supply the developer (toner) of the color corresponding to each developer 14 according to an individual.

[0020] Firm-bridging support is carried out with two or more support rolls 21-24, and the middle imprint belt 20 rotates in the direction of arrow-head B so that the primary imprint section (part where the primary transfer roller 15 contacts) of the photoconductor drum 11 of each imaging unit 10 may be contacted and it may pass. The cleaning equipment for belts with which a sign 25 cleans a secondary transfer roller and 26 cleans the front face of the middle imprint belt 20 in drawing 2, and 27 are electric supply members which impress secondary imprint bias to the shaft of the secondary transfer roller 25 and the support roll (secondary imprint back up roll) 22 in the location which counters.

[0021] The feed system section 4 of the above-mentioned feed section 2 consists of a form hold tray 30 which loads and holds two or more sheets of recording papers P, and a form transmitting mechanism 31 for sending out at a time one sheet of record form by which loading hold is carried out from that most significant to this form hold tray 30 at the time of feeding. The pressurization member which an anchorage device and 36 are used as the heating roller in an anchorage device 35, and the resist roll pair which sends in the detail paper P with which the sign 32 was sent out from this feed system section 3c to predetermined timing in the secondary imprint section between the middle imprint belt 20 and the secondary transfer roller 25, and 35 use the pressure welding of 37 to a heating roller 36 into drawing 2, and forms the fixing nip section, and 38 are delivery roll pairs which discharge the detail paper P after fixing to said delivery unit 3c.

[0022] Such each part article of imaging system section 4 grade is indirectly attached in the body frame which is not illustrated through other direct or support frame etc.

[0023] And formation of the full color image by this color picture formation equipment is performed as follows fundamentally.

[0024] First, after the photoconductor drum 11 which rotates in the direction of an arrow head was uniformly charged with the electrification roll 12 in each imaging unit 10, By the aligner 13, the exposure scan of the laser beam LB according to image information is carried out, and an electrostatic latent image is formed in the electrified photoconductor drum 11. After an appropriate time, the electrostatic latent image is supplied from a developer 14, negatives are developed by the developer (toner), and, thereby, yellow, a Magenta, cyanogen, and the toner image of four colors of black are formed. Subsequently, after imprinting so that it may lay on top of the middle imprint belt 20 one by one with the primary transfer roller 15, to the recording paper P fed to the secondary imprint section, each toner image of four colors on the photoconductor drum 11 of each of this imaging unit 10 is put in block by secondary transfer roller 25 grade, and is imprinted. The recording paper P with which this toner image was imprinted is discharged by delivery unit 3c after fixing processing is carried out by being sent to an anchorage device 35 and passing the fixing nip between a heating roller 36 and the pressurization member 37. A desired full color image is formed on the recording paper P as mentioned above.

[0025] On the other hand, as the power supply section 5 in the above-mentioned image formation section 1 shows drawing 3 - drawing 5, the principal part consists of the AC power supply unit [which is arranged in the tooth-back side of the metal bookbinding object frame 40 of image formation equipment] 51, 1st or 3rd high voltage power supply circuit board 52-54 and 1st thru/or 3rd low voltage power circuit substrate 55-57. Each of drawing 3 and drawing 4 illustrates the condition after removing rear-cover 3c (refer to drawing 1 b) of sheathing covering 3a. Moreover, the rotation base material with which the sign 60 in drawing attaches the 1st and 2nd high voltage power supply circuit boards 52 and 53, and 80 show an image information input-process unit.

[0026] First, the body frame 40 in which this power supply section 5 is arranged As it is used also in order to attach each part article which constitutes the imaging system section 4, and shown in drawing 5 etc. The principal plane section 41 which consists of a field configuration of the magnitude which is mostly equivalent to

the width method and height dimension when seeing from the transverse plane of the imaging system section 4 whole, It mainly consists of lateral portions 42 and 43 which stand in a row as bent towards the tooth-back side from the both ends of this principal plane section 41, and a bottom surface part 44 which forms a base in the condition of having combined with the lower limit section of that principal plane section 41, and the lower limit section of lateral portions 42 and 43.

[0027] Incidentally, with this operation gestalt, as shown in drawing 5 or drawing 6, that frame principal plane section 41 is received. imaging unit 10K in the imaging system section 4, and a resist roll pair -- the Maine drive unit (a unit frame -- an electric motor --) which tells the rotational motion force to 32 and anchorage device 35 grade the drum drive unit 62 (a unit frame -- an electric motor --) which tells the rotational motion force to the thing 61 which carried the rotation transfer device etc., and each photoconductor drum 11 of the imaging unit 10 What [carried the rotation transfer device etc.] While said image information input-process unit 80 is connected, the trunk connection unit (what prepared various kinds of connectors etc. in the unit frame) 85 connected after various kinds of interconnection cables (wire harness etc.) have acted as intermediary is attached.

[0028] The above-mentioned AC power supply unit 51 consists of socket section 51a for connecting the power cord connected to AC power receptacle, rectifier 51b which rectifies AC current. The above 1st and the 2nd high voltage power supply circuit board 52 and 53 The pressure-up transformers 52a and 53a, Capacitors 52b and 53b, SW component 53c, It is the circuit board in which various electrical parts, such as 53d of heat sinks etc., etc. were carried, and a desired high voltage direct current electrical potential difference (for example, electrical potential difference selected within the limits of about 500V-10kV) is generated. The electrification roll 12 of the imaging system section 4, a developer 14 (development roll 14a), It outputs to the electric supply member 27 grade of the secondary imprint section. Moreover, it is the circuit board in which various electrical parts, such as a pressure-up transformer and a capacitor, etc. were carried, and the 3rd high-voltage-power-supply circuit 54 also carries out pressure-up generation of the desired high voltage direct current electrical potential difference, and outputs it to primary transfer roller 15 grade.

[0029] Moreover, the low voltage power circuit substrate 55 of the above 1st is the circuit board in which various electrical parts, such as a pressure-lowering transformer and a capacitor, etc. were carried, for example, generates about [24V] low voltage direct current voltage, and outputs it to said Maine drive unit 61 or drum drive unit 62 grade. Moreover, the low voltage power circuit 56 of the above 2nd is outputted to the control board 83 grade which carried various electrical parts, such as a pressure-lowering transformer and a capacitor, etc. and which is the circuit board, for example, generates about [5V] low voltage direct current voltage, and image formation equipment mentions later. Furthermore, the low voltage power circuit 57 of the above 3rd is outputted to the small control board of each of said unit which is the almost same circuit board, for example, generates about [3V] low voltage direct current voltage, and is not illustrated, various sensors, etc.

[0030] And this power supply section 5 arranges above-mentioned AC power supply unit 51, each high voltage power supply circuit boards 52-53, and each low voltage power circuit substrates 55-57 in the condition that it stands in a line in the shape of a multilayer towards a transverse-plane side from the tooth-back side of equipment as shown in drawing 6.

[0031] That is, the AC power supply unit 51, 1st, and 2nd high voltage power supply circuit boards 52 and 53 are arranged in the condition of the body frame 40 that a tooth-back side (frame bottom surface part 44) is adjoined most. Moreover, the 3rd high voltage power supply circuit board 54 has been arranged to the Maine drive unit 61 neighborhood which is the equipment transverse-plane side of the AC power supply unit 51, and was attached in the principal plane section 41 of the body frame 40, and it is the upper part of the AC power supply unit 51, and the 1st low voltage power circuit substrate 55 is arranged to the tooth-back side of the 3rd high voltage power supply circuit board 54. Furthermore, where it is the equipment transverse-plane side of the 1st and 2nd high voltage power supply circuit boards 52 and 53 and the 2nd and 3rd low voltage power circuits 56 and 57 are arranged in between the principal plane sections 41 of the body frame 40 (frame bottom surface part 44), it arranges.

[0032] And it is attached in each part of the body frame 40 that the AC power supply unit 51, each high voltage power supply circuit boards 52-53, and each low voltage power circuit substrates 55-57 which constitute this power supply section 5 are again also for the following configurations.

[0033] First, the 1st and 2nd high voltage power supply circuit boards 52 and 53 As shown in drawing 3 -

drawing 7 , while consisting of structure of having the support plate section 61 which attaches the circuit board, and the outer frame section 62 suitably formed in the perimeter. The rotation base material 60 which carries out the core of the pivots 63a and 63b projected and formed in the perimeter frame part 62, and rotates in the directions E and F of an arrow head is used. where the solder side (rear-face side of a substrate) of each substrates 52 and 53 is opposed, after attaching in the front rear faces (the lateral surface, medial surface) 61a and 61b of the support plate section 61 -- the body frame 40 -- it has attached so that it may be most located in a tooth-back side. Thereby, it makes it possible to arrange the high voltage power supply circuit board by space-saving.

[0034] The rotation base material 60 consists of a plastics cast using synthetic resin, such as Denaturation PPO (polyphenylene oxide system resin). Moreover, this rotation base material 60 is attached in the bottom surface part 44 of the body frame 40 of the body of equipment which becomes a tooth-back side most rotatable through the 1st and 2nd brackets 65 and 66 attached by fixed means, such as a screw stop. That is, the 1st bracket 65 consists of a gestalt which mainly has lateral portion 65b bent and extended to the transverse-plane side of the body of equipment from the single-sided edge of tooth-back section 65a along the tooth back of the body of equipment, and its tooth-back section 65a, and bearing hole 65c which pivot 63a of the rotation base material 60 is inserted in the lateral portion 65a, and is supported rotatable is established. On the other hand, the 2nd bracket 66 consists of a gestalt which mainly has lateral portion 66b bent and extended to the transverse-plane side of the body of equipment from the single-sided edge of tooth-back section 66a along the tooth back of the body of equipment, and its tooth-back section 66a, and bearing slot 66c which pivot 63b of the rotation base material 60 is inserted in the lateral portion 66a from the upper part, and is supported rotatable is established.

[0035] After the rotation base material 60 inserts into bearing hole 65c of the 1st bracket 65 by this pivot 63a formed in the lower part side of the outer frame section 62, While being attached by inserting another pivot 63b in bearing slot 66c of the 2nd bracket 66, it can change into the condition (refer to 60a shown according to the two-dot chain line of drawing 7) of having turned sideways [the condition and sideways] which were rotated in the direction of an arrow head and stood. Thereby, at the time of the maintenance of the high voltage power supply circuit boards 52 and 53, it accesses, and is easy to work and has become. In addition, although it changes the rotation base material 60 into the condition of having stood at the time of usual, the predetermined part of that outer frame section 62 is fixed to body frame 40 grade by fixed means, such as a screw stop, in this case.

[0036] Moreover, this rotation base material 60 can be easily removed now from brackets 65 and 66, as a result the body frame 40 by carrying out the procedure of the above-mentioned installation on the contrary. At the time of the maintenance of the low voltage power circuit substrates 56 and 57 which it becomes easy to do the activity at the time of the maintenance of the high voltage power supply circuit boards 52 and 53, and are arranged behind this rotation base material 60 (equipment transverse-plane side) by this, it accesses, and is easy to work and has become. And the rotation base material 60 can be maintained now in the condition (refer to 60b shown according to the two-dot chain line of drawing 7) of having inclined, by inserting and hooking a predetermined stop hole on 65d of stop clicks formed in the 1st bracket 65 using the stop belt 64 with which two or more stop holes were established, as shown in drawing 4 . Also by this, the low voltage power circuit substrates 56 and 57 arranged in that back location can be accessed easily, without removing the interconnection cable of the high-voltage-power-supply circuit boards 52 and 53.

[0037] The 1st and the 2nd high-voltage-power-supply circuit board 52, and 53 which were attached in such a rotation base material 60 are electrically connected by the interconnection cable (wire harness) 81, as shown in drawing 7 . Moreover, each high voltage power supply circuit boards 52 and 53 are connected with each output destination change of the imaging system section 4 or feed system section 6 grade through the distribution cables 82 and 83 attached in each high-pressure output connectors 66a and 66b. Furthermore, the high voltage power supply control board 57 is attached in the 1st high voltage power supply circuit board 52 through the connector 58. Moreover, this high-voltage-power-supply control board 57 is connected with the Maine harness which is not illustrated by the interconnection cable 84.

[0038] Moreover, it is attached in tooth-back section 65a of the 1st bracket 65 which attaches this rotation base material 60 where the handle member 67 for equipment migration is fixed. On the other hand, 66d of socket openings for an external power output is established by tooth-back section 65a of the 2nd bracket 66.

[0039] Next, each part articles, such as above-mentioned socket section 51a and rectifier 51b, are attached in the box-like frame 71 which was formed so that three lateral portions might start from a rectangular base mostly and which consists of the shape of a cube type mostly, and the AC power supply unit 51 is attached near Connor which consists of the bottom surface part 44 and lateral portion 43 of the body frame 40 with fixed means, such as a screw stop. Moreover, it is attached in tooth-back section 71a of the box-like frame 71 where the handle member 72 for equipment migration is fixed.

[0040] The 3rd high voltage power supply circuit board 54 is attached in the lateral portion 43 of the frame part of the Maine drive unit 61, or the body frame 40 by fixed means, such as a screw stop, through the support frame, after being attached in the support frame 73 which consists of a box (lid) configuration of a shallow rectangle.

[0041] The 1st low voltage power circuit substrate 55 is attached in the box-like frame 71 of the principal plane section 41 of the body frame 40, or the AC power supply unit 51 by fixed means, such as a screw stop, after being attached in the support frame 74 which consists of a rectangular plate configuration. By attaching, where the support frame 74 of this low voltage power circuit substrate 55 is especially described above When it has by hand the handle member 72 attached in the box-like frame 71 of the AC power supply unit 51 at the time of equipment migration In addition to the force (stress) concerning the handle member 72 getting across to the bottom surface part 44 of the body frame 40, the principal plane section 41 of the body frame 40 is distributed through the support frame 74, and it comes to be transmitted. That is, the support frame 74 of the low voltage power circuit substrate 55 functions also as one sort of reinforcement members.

[0042] The 2nd and 3rd low voltage power circuit substrates 56 and 57 are attached in the principal plane section 41 of the body frame 40 by fixed means, such as a screw stop, through the bending sections 75a and 75b, after the whole by which vertical both ends were bent at the equipment transverse-plane side and which bends and has Sections 75a and 75b opened spacing in the support frame 75 which consists of a rectangular plate configuration, arranged on it and is attached in it. Moreover, opening 75c for viewing and checking the parts of the rotation transfer devices (gear etc.) of the drum drive unit 62 arranged at that equipment transverse-plane side etc. to the exposure which becomes between the low voltage power circuit substrates 56 and 57 of this support frame 75 is established. In addition, opening 62a for a check is established to the part which exists [devices / (gear etc.) / which are checked also to the drum drive unit 62 corresponding to this opening 75c / rotation transfer] (refer to drawing 5 and drawing 6). Thereby, without removing the 2nd and 3rd low voltage power circuit substrates 56 and 57, it becomes possible to check the parts of the rotation transfer devices (gear etc.) of the drum drive unit 62 etc. by viewing through the opening 75c (and opening 62a), and the convenience at the time of a maintenance becomes good.

[0043] each part article (51-57) it is unrefined from above arrangement and attaching structure -- for example, it is attached in body frame 40 grade in the following procedures, and, thereby, a power supply section 5 is assembled easily and efficiently.

[0044] After attaching the 2nd and 3rd low voltage power circuit substrates 56 and 57 in the principal plane section 41 of the body frame 40 through the support frame 75, while first attaching the AC power supply unit 51 in the end section side of the bottom surface part 44 of a body frame through the box-like frame 71, it reaches the other end side of the bottom surface part 44 of a body frame, and the 1st bracket 65 and the 2nd bracket 66 are mostly attached in a center section, respectively. Subsequently, after attaching the 3rd high voltage power supply circuit board 54 in the lateral portion 43 of the Maine drive unit 61 or a body frame through the support frame 73, the 1st low voltage power circuit substrate 55 is attached in the lateral portion 43 of the box-like frame 71 of the AC power supply unit 51, or a body frame through the support frame 74. Finally, the 1st and 2nd high-voltage-power-supply circuit boards 52 and 53 are attached in the 1st bracket 65 and the 2nd bracket 66 (bearing hole 65c and bearing slot 66c) through the rotation base material 60. Thereby, a power supply section 5 is assembled. Incidentally, before attaching the 1st and 2nd high voltage power supply circuit boards 52 and 53 (substantially rotation base material 60), the above mentioned image information input-process unit 80 is attached so that it may mention later to the above mentioned trunk connection unit 85. Moreover, a power supply section 5 is assembled in this way, and a power supply section 5 is intercepted by the back with the exterior by attaching the above mentioned rear-cover 3c.

[0045] And on the occasion of the activity at the time of a maintenance of this power supply section 5 etc., by removing rear-cover 3c first, as shown in drawing 3 , in [of a power supply section 5] the whole's being

outside exposed mostly, it can access separately to each part article which constitutes that power supply section 5.

[0046] That is, the 1st high voltage power supply circuit board 52 attached in the external surface of the support plate section 61 of the rotation base material 60 can be accessed easily first. Especially, with the gestalt of this operation, since the power circuit control board 57 is attached as described above to the 1st high voltage power supply circuit board 52, access to this circuit board 57 can also be made easy. Moreover, the 1st low voltage power circuit substrate 55 arranged above the AC power supply unit 51 which adjoins beside this 1st high voltage power supply circuit board 52, and the AC power supply unit 51 can also be accessed easily.

[0047] Moreover, as shown in drawing 4, it can access easily by rotating the rotation base material 60 so that they may be pushed down in the direction (drawing 7) of arrow-head E, using the pivots 63a and 63b as the supporting point to access the 2nd high voltage power supply circuit board 53 and the 2nd and 3rd low voltage power circuit substrates 55 and 56.

[0048] That is, by being in the condition that the rotation base material 60 fell, the 2nd high voltage power supply circuit board 53 attached in the inside of the support plate section 61 of the rotation base material 60 can be accessed easily, and since the 2nd and 3rd low voltage power circuit substrates 55 and 56 moreover arranged in the condition of having hidden in the back side (equipment transverse-plane side) of the rotation base material 60 also appear [the], it can access easily. In addition, it is also possible in this case to change into the condition (60b shown according to the two-dot chain line of drawing 7) of having inclined to the predetermined include angle by stopping suitably the stop belt 64 described above if needed with the stop hole of a location, without changing into the condition of having toppled the rotation base material 60 completely.

[0049] Moreover, when it considers as the condition (60a shown according to the two-dot chain line of drawing 7) of having toppled the rotation base material 60 completely, a part of rotation transfer device can be looked into and checked to the drum drive unit 62 through opening 65c established by the support frame 75 of the 2nd and 3rd low voltage power circuit substrates 55 and 56 (refer to drawing 4 and drawing 6). And if it is necessary to do the maintenance eggplant activity of that drum drive unit 62 in this case, it will become accessible easily by removing the 2nd and 3rd low voltage power circuit substrates 55 and 56 (support frame 75).

[0050] Furthermore, what is necessary is just to remove the 1st low voltage power circuit substrate 55 (support frame 74) to access the 3rd high voltage power supply circuit board 54. And when it removes also about the 1st low voltage power circuit substrate 55 in this case, it becomes accessible easily also at the Maine drive unit 61.

[0051] Moreover, at the time of migration of this color picture formation equipment, the whole equipment can be easily moved by putting in and raising a hand to said handle members 67 and 72 for migration attached in the 1st bracket 65 and the box-like frame 71 on the bottom surface part 44 of the body frame 40, respectively in addition to the handle member for migration which is not illustrated [which was suitably arranged in that lower part side]. About especially the above-mentioned handle members 67 and 72 for migration, also in the condition of having removed rear-cover 3c, it can use at the time of the maintenance of power supply section 5 grade, and is convenient.

[0052] And with this color picture formation equipment, as shown in drawing 4 R>4 grade, the interconnection cable (wire harness which transmits especially a picture signal) 100 which connects the aligner 13 and the image information input-process unit 80 (connectors 83a and 83b (refer to drawing 8) of the below-mentioned control board 83 attached) of said imaging system section 4 is appropriately taken about in the body frame 40 of a power supply section 5, and it is wiring.

[0053] That is, in order to realize wiring in the condition of having contacted the corner section of the structure made into the ideal wiring condition demanded in the interconnection cable 100 which transmits a picture signal, or its surface part, as shown in drawing 3 or drawing 4, crevice 42a for cable wiring for taking about a distribution cable 100 within the in-between section from the aligner 13 to said image information input-process unit 80 was formed in the lower part side of the lateral portion 42 of the body frame 40. Moreover, since it supplemented with the fall of the lateral portion 42 of the body frame 40 by forming this crevice 42a for cable wiring on the strength, the reinforcement surface part 65 joined to lateral portion 65b of said 1st bracket 65 corresponding to the formation location of that crevice 42a for cable wiring by fixing to the lateral portion 42 of said body frame 40 was formed. Moreover, the cable prevention members 86a and 86b were attached in the predetermined part of the reinforcement surface part 65 of the bracket 65, or the lateral portion 42 of the body

frame 40. This is enabled to wire, where a distribution cable 100 is contacted in the lateral portion 42 of the body frame 40, or the corner section of lateral portion 65b of the 1st bracket 65, and reinforcement surface part 65e. Even if it carries out wiring which takes about the interconnection cable 85 which transmits a picture signal by carrying out such wiring so that it may pass near the electric motor 62b in the drum drive unit 62 (refer to drawing 4 and drawing 5), problems, like a noise enters are avoided.

[0054] Moreover, with this color picture formation equipment, in order to enable it to equip with said image information input-process unit 80 easily to the trunk connection unit 85 as shown in drawing 8 and drawing 9 , the installation structure in which the following attachment and detachment are free is adopted.

[0055] This consists of a box-like base material 81 with which the image information input-process unit 80 consists of a comparatively big dimension. In the time of installation of the relation top in which each control circuit substrate is attached inside the base material 81, and the connector 82 for connection with the substrate is arranged in the condition of the inferior surface of tongue (rear face) of a base material 81 of having projected in the center section mostly, and its processing unit 80 It is because it checks by looking and is hard to carry out ***** operation of the activity for making it combine with the connected connector 87 combined with said connector 82 for connection arranged in the upper part of the support frame 86 of the trunk connection unit 85.

[0056] Then, as shown in drawing 8 , the clamp member 90 was formed in the location near the both sides of the connector 82 for connection on the inferior surface of tongue of the base material 81 of the image information input-process unit 80, and, on the other hand, the positioning crevice 95 was established in the part of the lateral portion corresponding to said clamp member 90 of the support frame 86 of the connector 82 for connection. The various connectors for the interface for inputting image information etc. and 87 are the various connectors for trunk connection by a sign's 83 minding a control circuit substrate, and 84 minding an external connection device and an interconnection cable in drawing 8 and drawing 9 , and connecting. In addition, with the gestalt of this operation, the above-mentioned connector 82 for connection is attached in the inferior surface of tongue of a base material 81 at the above-mentioned control circuit substrate 83 by which direct attachment was carried out.

[0057] The two pieces 91 and 92 of the 1st and 2nd clamp which deforms the clamp member 90 elastically by migration actuation at the time of attachment-and-detachment actuation of the image information input-process unit 80, and carry out compression maintenance of the support frame 86 (lateral portion) of the trunk connection unit 85 and which counter are formed. While the piece 91 of the 1st clamp is formed mostly in a vertical plane, the side in which the free edge has the piece 92 of the 2nd clamp consists of a gestalt bent in the opposite side. Moreover, the piece 92 of the 2nd clamp consists of a gestalt in which the variant part (compression section) which carried out curve deformation so that a pressure welding might be carried out to the point side at the piece 91 side of the 1st clamp was formed. Thereby, when the pieces 91 and 92 of the 1st and 2nd clamp give external force, elastic deformation of the clamp member 90 can be carried out, but at the time, when the variant part of the piece 92 of the 2nd clamp carries out a pressure welding to the piece 91 side of the 1st clamp, where a maintenance object (here support frame 86 of the connector 82 for connection) is compressed, it can usually hold.

[0058] on the other hand, the positioning crevice 95 is long by side in which the variant part of the piece 92 of the 2nd clamp in the clamp member 90 is inserted -- it is a crevice on an ellipse mostly. That is, it is formed in extent to which the variation rate of the variant part of the piece 92 of the 2nd clamp can be made to carry out in the joint direction (the direction of arrow-head X in drawing 8) of the connector 82 for connection, and the connected connector 87, and the direction (the direction of arrow-head Y in drawing 8) which intersects perpendicularly in the shape of [long and slender] a quirk (it is somewhat longer than the width of face of the variant part).

[0059] After locating the image information input-process unit 80 above the trunk connection unit 85 in installation of the image information input-process unit 80 by having adopted such installation structure, it changes into the condition of having dropped the image information input-process unit 80 (it moving in the direction which meets in the direction of arrow-head X), and having inserted the support frame 86 (positioning crevice 95) of the trunk connection unit 85 in said clamp member 90. Thereby, the image information input-process unit 80 will be in the condition (condition that a certain amount of positioning was carried out) of having been tacking carried out to the trunk connection unit 85. Subsequently, in this condition, when association of the connector 82 for connection and the connected connector 87 is tried and joint opening of each

of that connector is in agreement, shifting the image information input-process unit 80 a little in the direction of arrow-head Y in drawing 8 R> 8, the image information input-process unit 80 is dropped further. Thereby, both the connectors 82 and 87 join together.

[0060] Consequently, it will be in the condition that the trunk connection unit 85 was equipped with the image information input-process unit 80, and it was attached, as [show / in drawing 9]. Since the clamp member 90 holds the support frame 86 (positioning crevice 95) of the trunk connection unit 85 at the time of this wearing, it also becomes playing the role holding the trunk connection unit 85 connected to the lower part side of the image information input-process unit 80. What is necessary is on the contrary, to face removing the image information input-process unit 80 from the trunk connection unit 85, and just to raise the image information input-process unit 80 up (direction which meets in the direction of arrow-head X). Thereby, while association of both the connectors 82 and 87 separates, the pieces 91 and 92 of the 1st and 2nd clamp of the clamp member 90 carry out elastic deformation, and separate from the positioning crevice 95.

[0061]

[Effect of the Invention] As explained above, according to the image formation equipment of this invention, especially a miniaturization of a power supply section is possible, the power supply section is begun, and improvement in the workability at the time of the assembly of image formation equipment and a maintenance is attained.

[Translation done.]

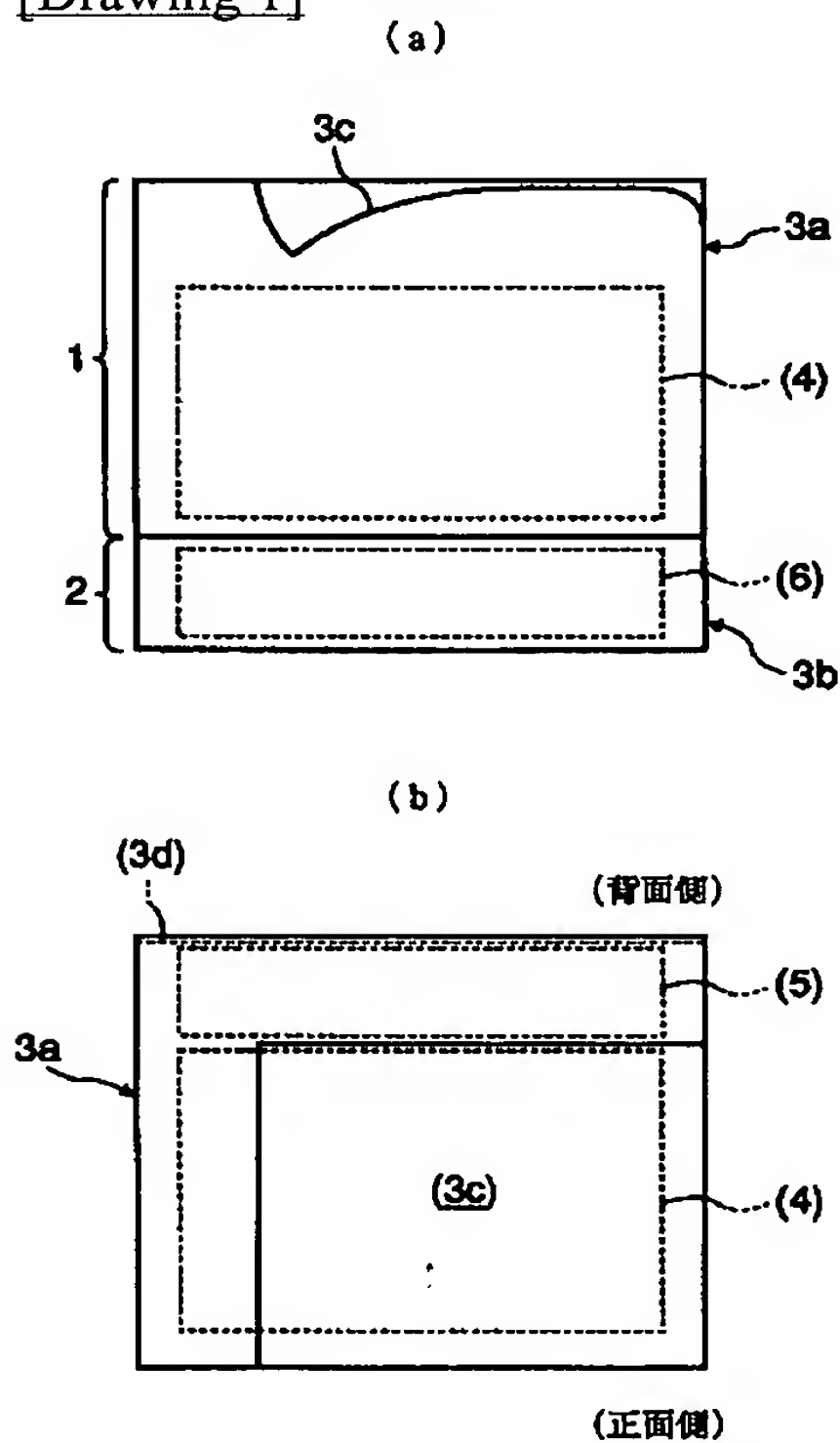
* NOTICES *

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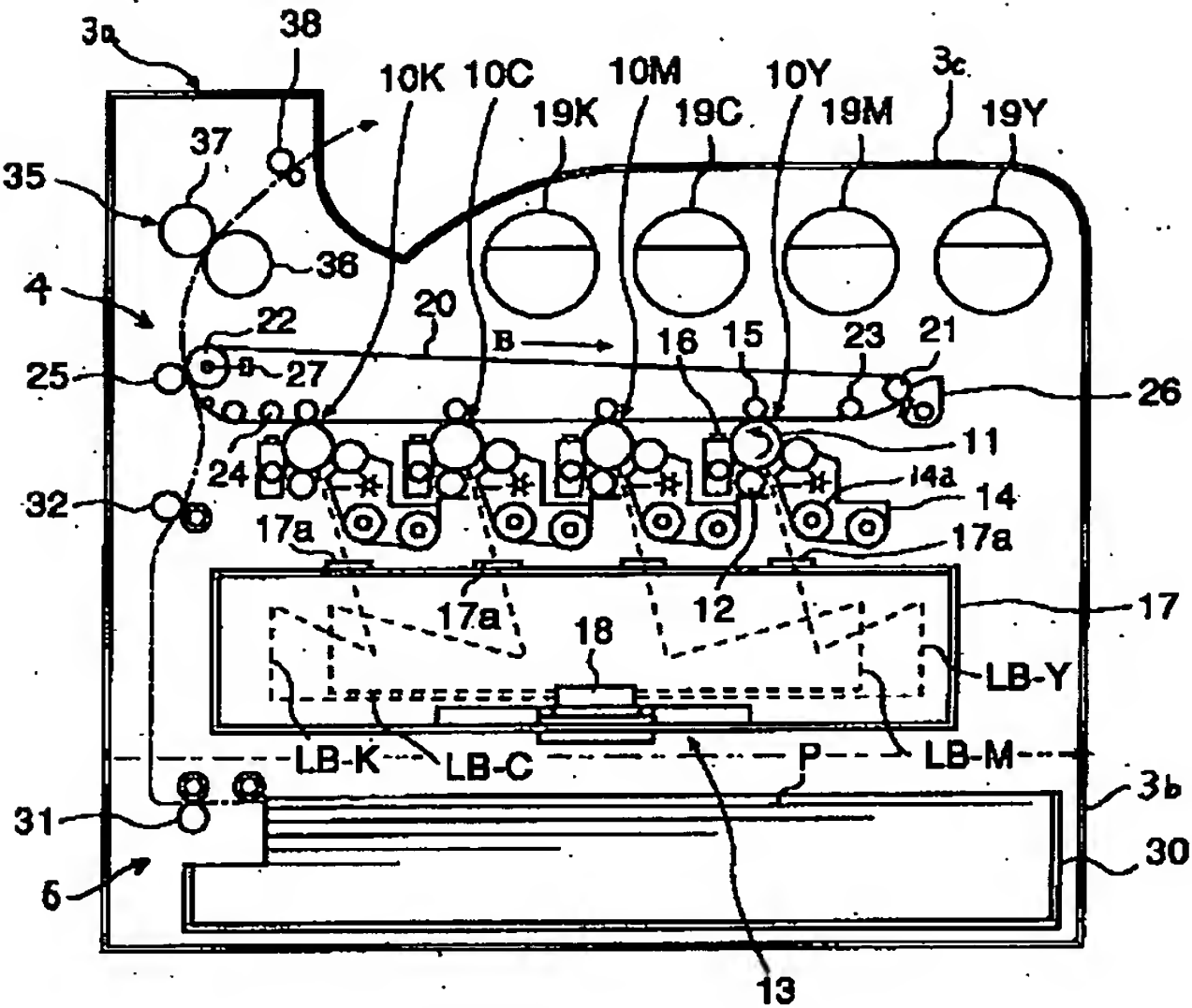
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DRAWINGS

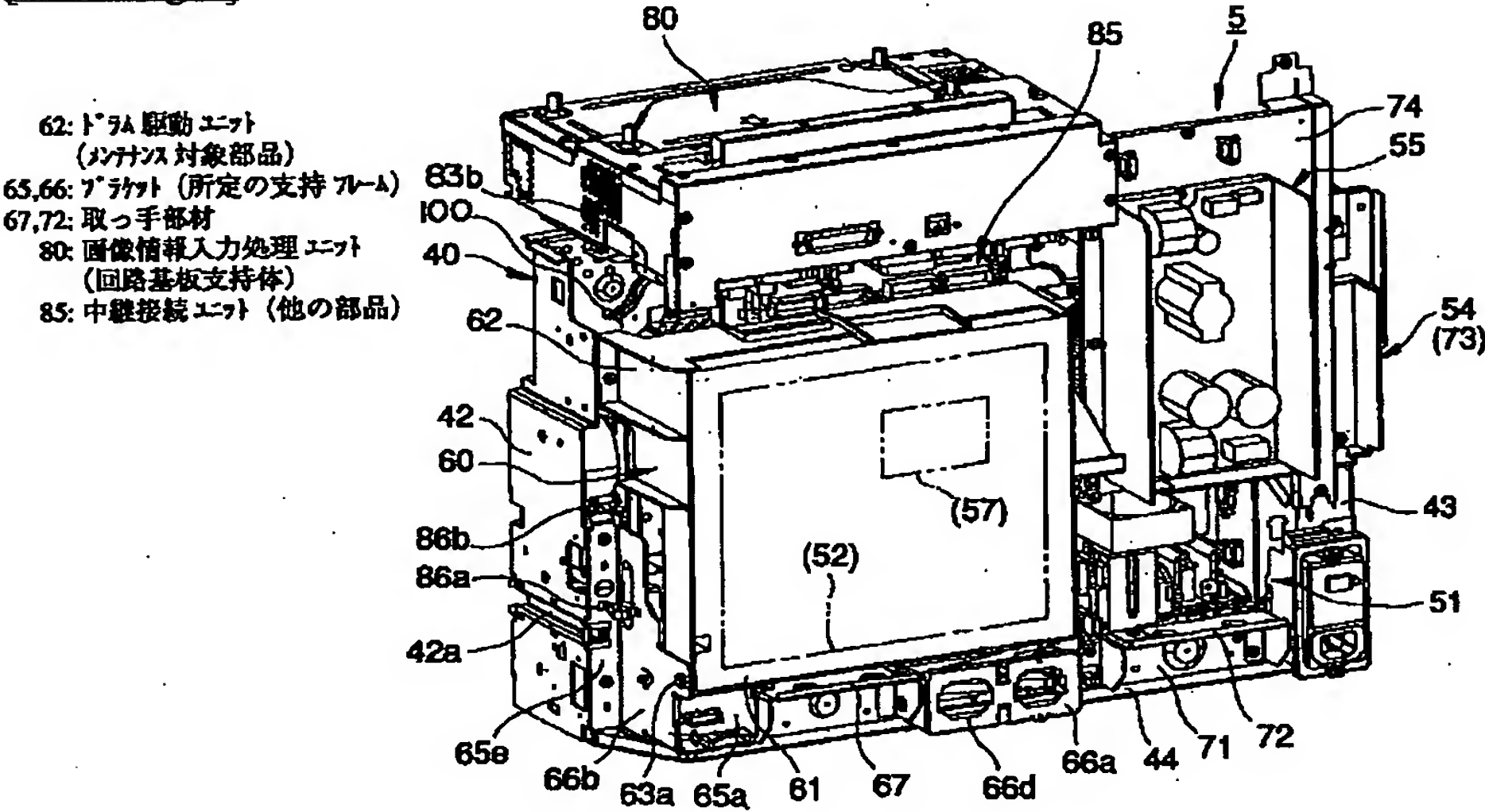
[Drawing 1]



[Drawing 2]

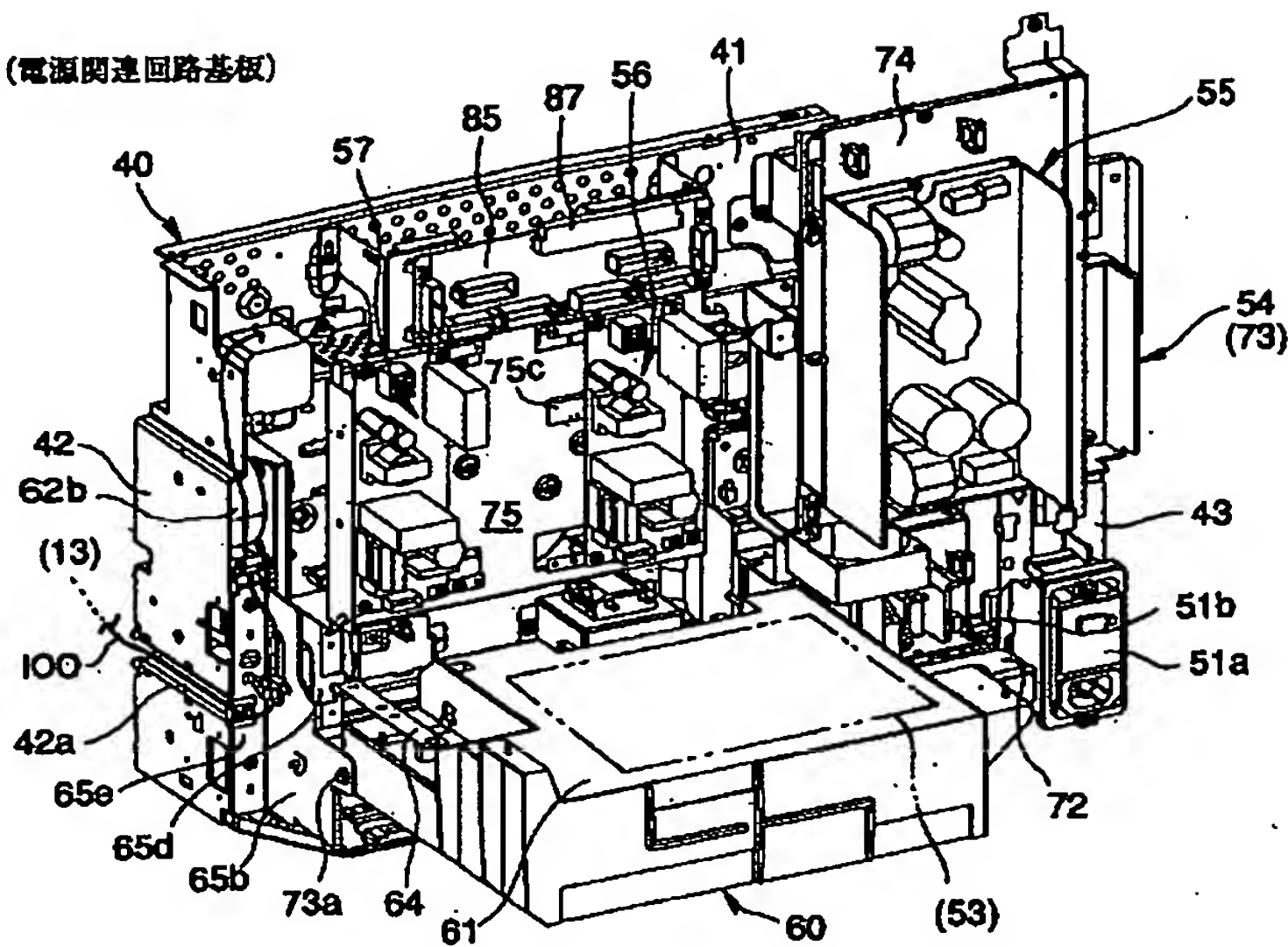


[Drawing 3]

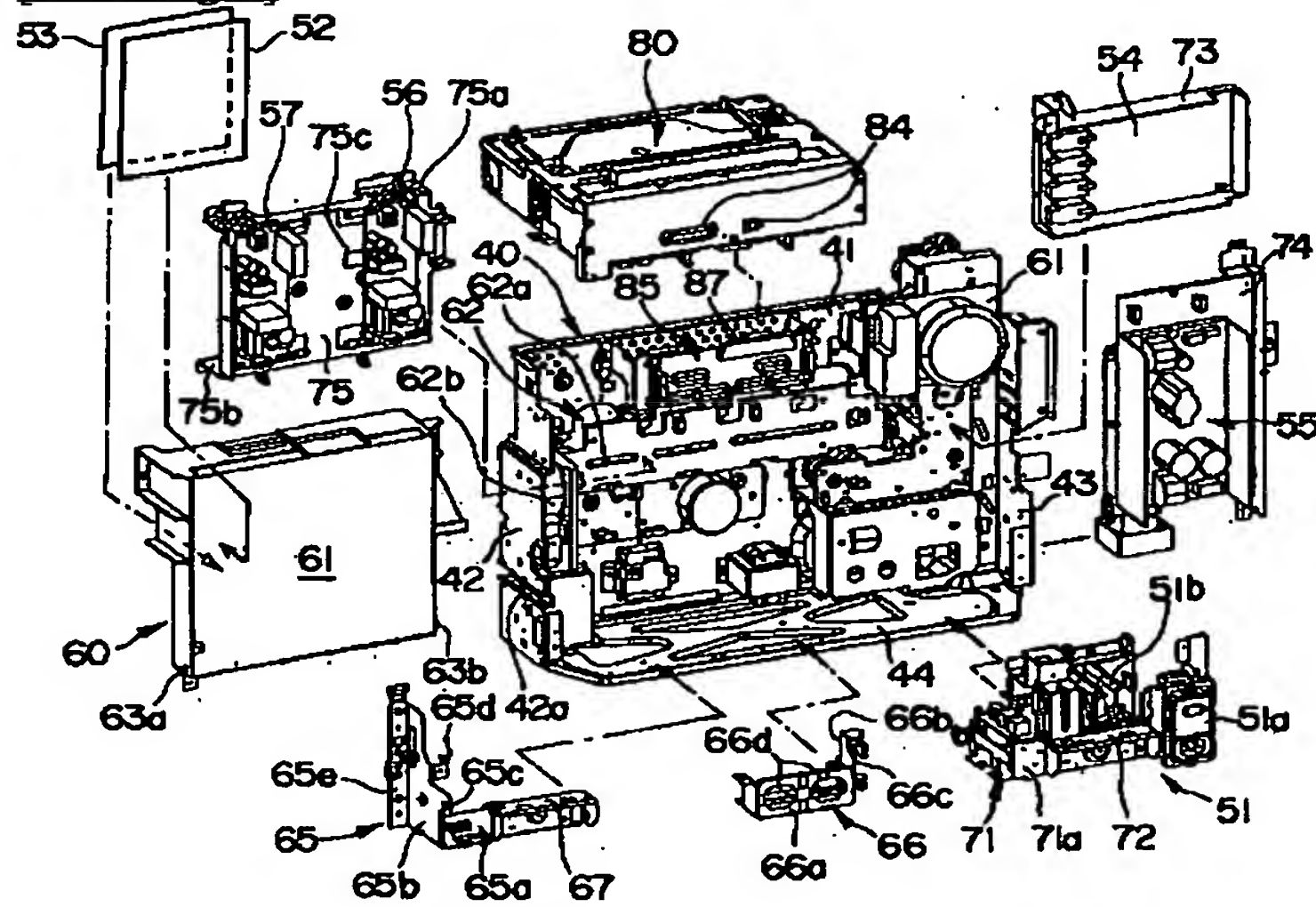


[Drawing 4]

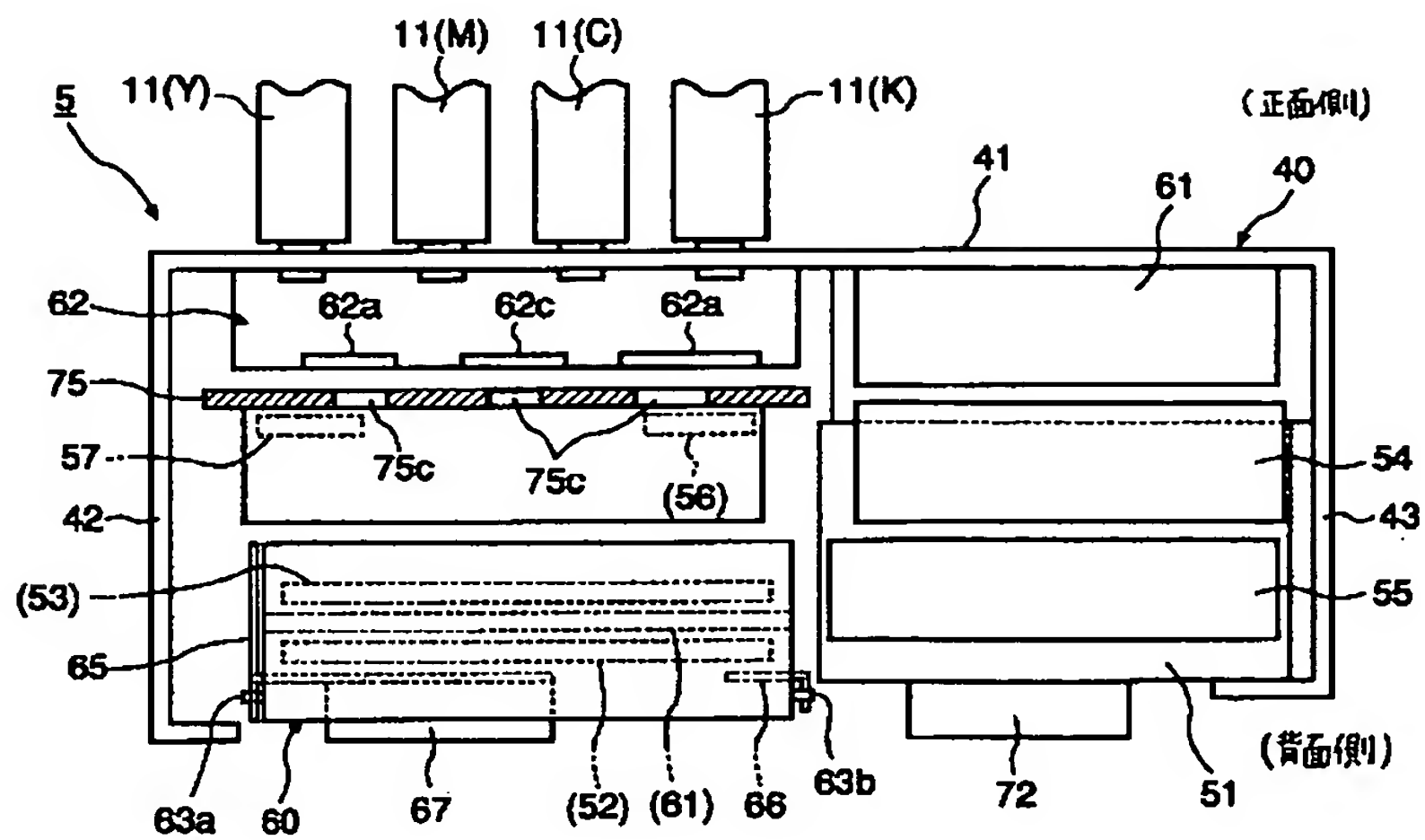
56,57: 低圧電源回路基板 (電源関連回路基板)
 75: 支持部
 75c: 開口部
 87: 被接続用端子



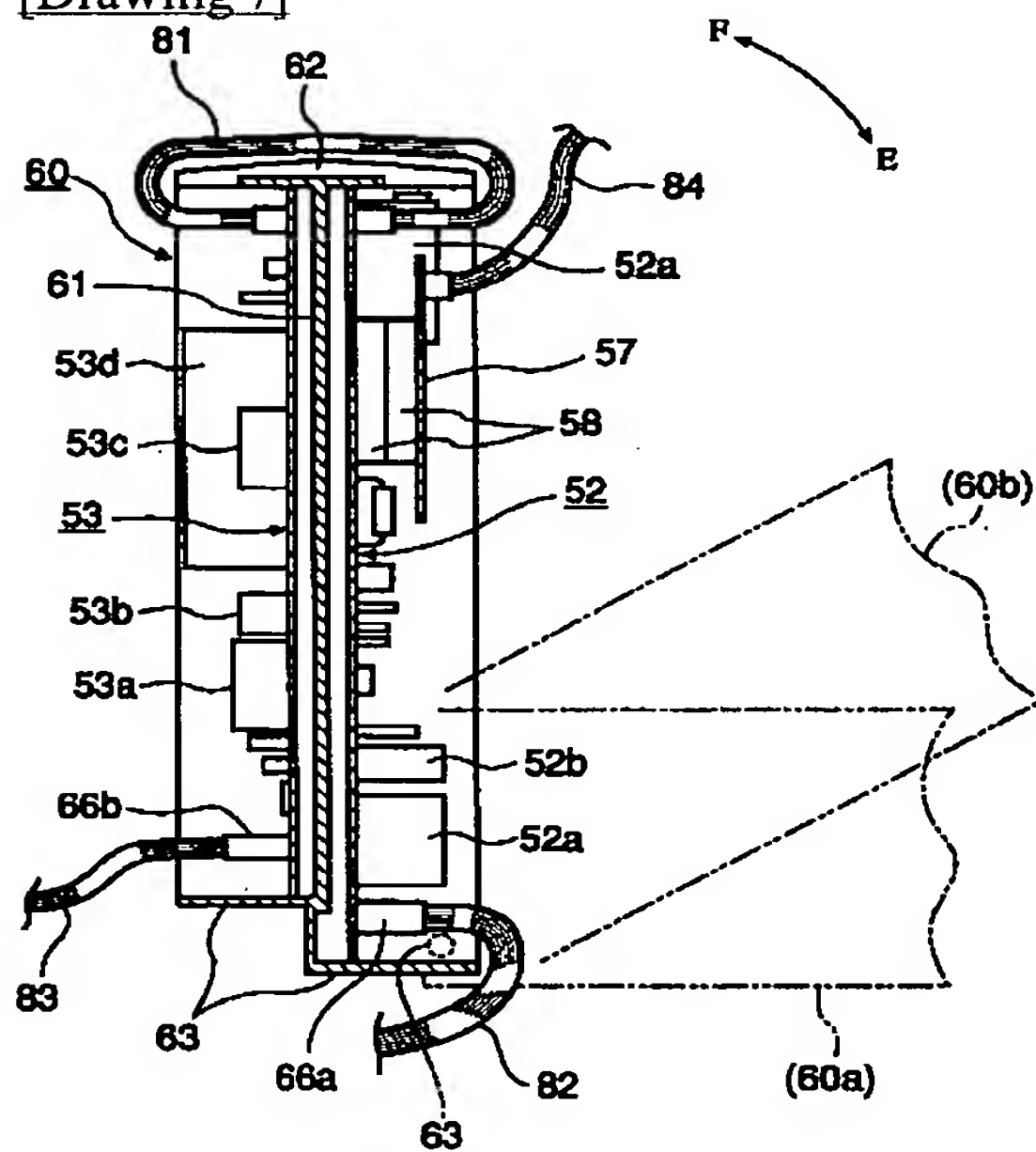
[Drawing 5]



[Drawing 6]



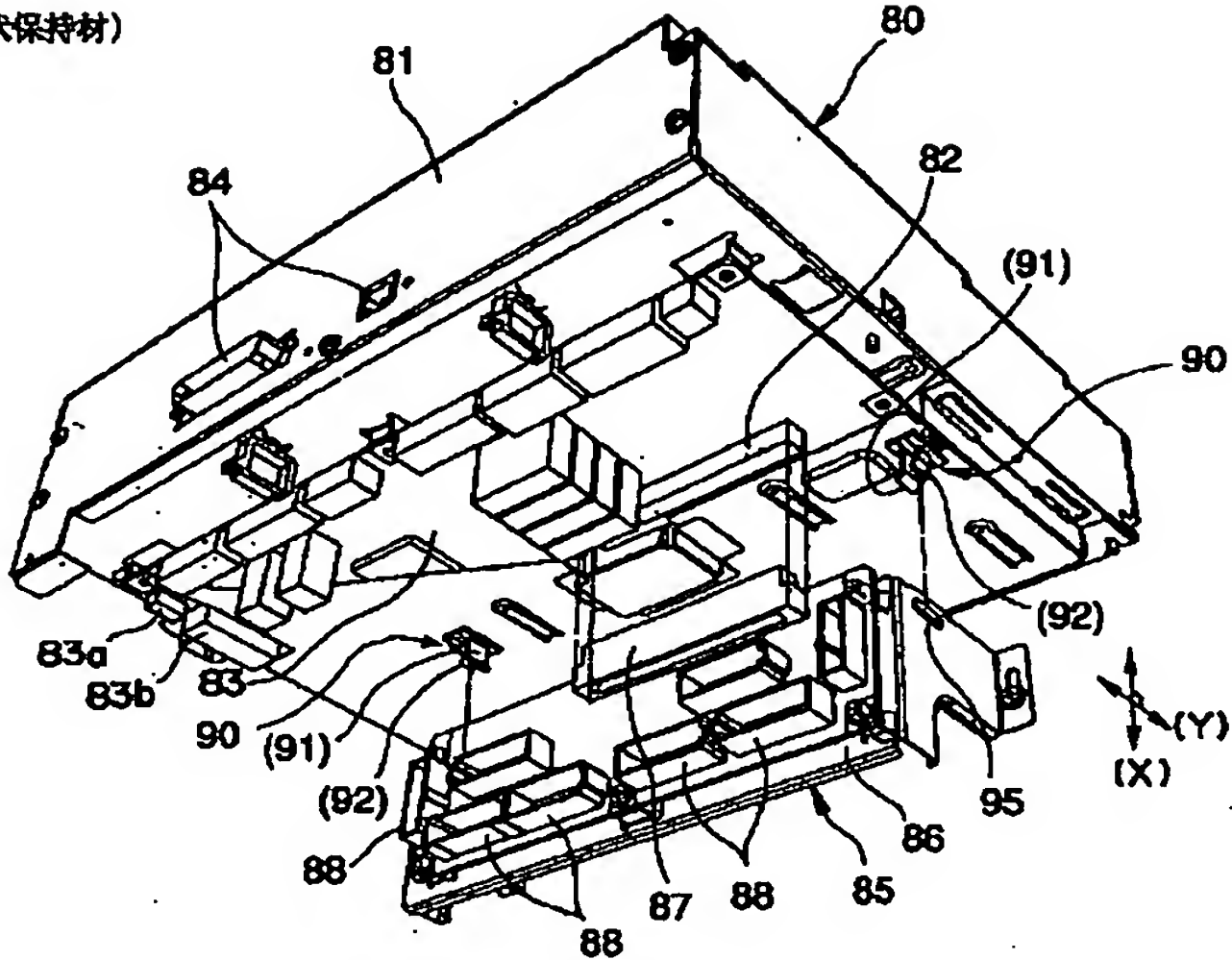
[Drawing 7]



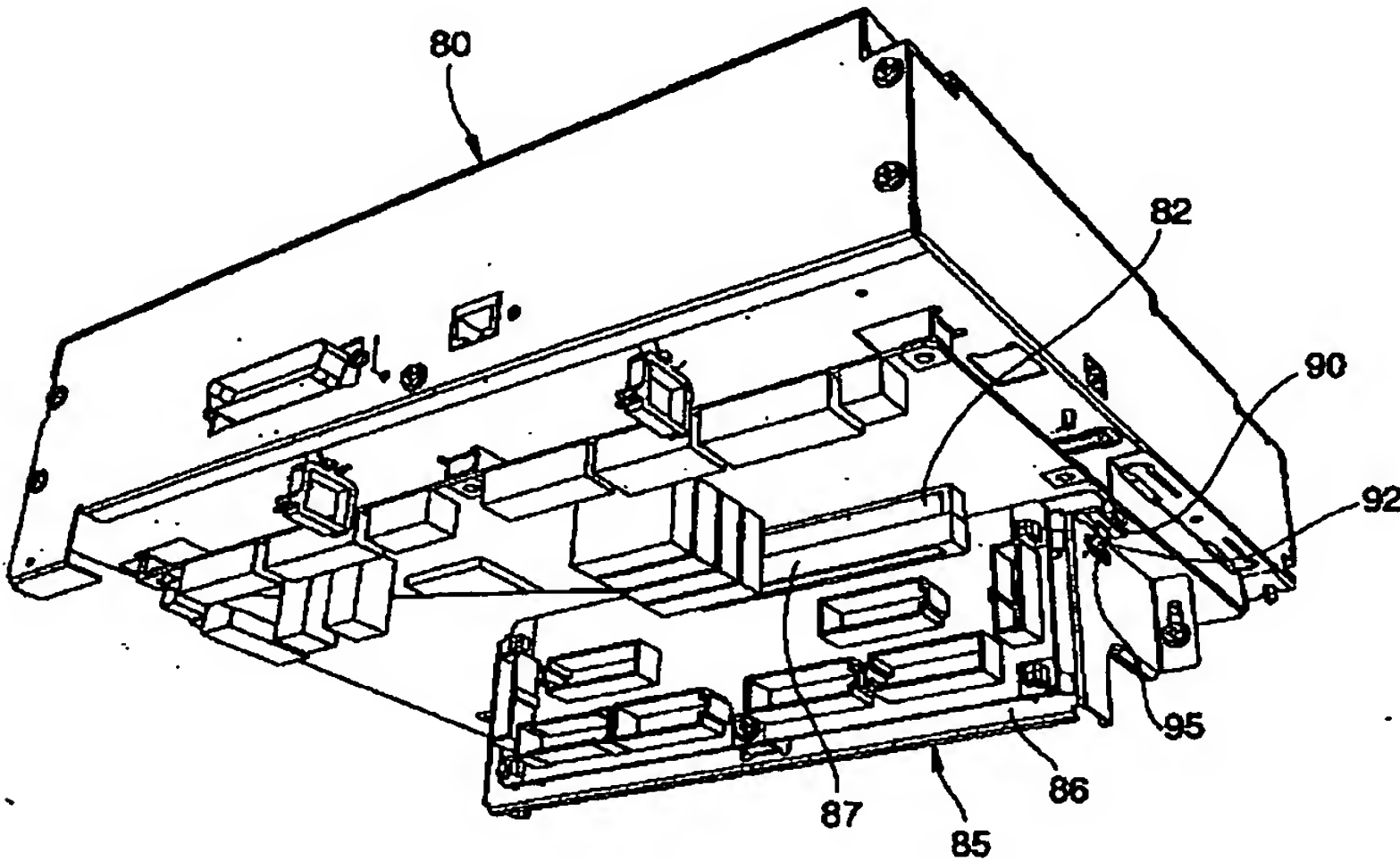
52,53: 高圧電源回路基板
 60: 回転支持体
 61: 支持板部 (支持板)
 82: 接続用コネクタ

[Drawing 8]

90: 保持部材 (保持 状態保持材)
95: 位置決め凹部
X: 保持部の結合方向



[Drawing 9]



[Translation done.]